

What is claimed is:

1. A printer operable in a duplex print mode for printing an image on one side of a sheet-like recording medium and then printing an image on the other side of said sheet-like recording medium, said printer comprising:

at least one print drum; and

at least one press roller facing said print drum for pressing the recording medium against said print drum;

wherein said press roller comprises, when configured to press the other side of the recording medium against said print drum, an elastic body having a fluorine compound layer on a surface thereof.

2. The printer as claimed in claim 1, wherein said elastic body comprises rubber while said fluorine compound layer comprises a film tube closely fitted on the surface of said elastic body.

3. The printer as claimed in claim 1, wherein said elastic body comprises rubber while said fluorine compound layer is formed by coating.

4. The printer as claimed in claim 1, further comprising cleaning means for removing ink deposited on a surface of said press roller.

5. The printer as claimed in claim 4, wherein said cleaning means is located between a position for transferring an image to the recording medium and a

position for refeeding the recording medium, which carries the image on one side thereof, in a direction of rotation of said press roller.

6. The printer as claimed in claim 4, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

7. The printer as claimed in claim 6, wherein at least a surface of said roller is porous.

8. The printer as claimed in claim 4, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

9. The printer as claimed in claim 1, further comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

10. The printer as claimed in claim 9, wherein said roller comprises an elastic roller having an adhesive

surface while said elastic roller comprises rubber and is caused to rotate by said press roller.

11. The printer as claimed in claim 9, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade configured to scrape off the ink deposited on said smooth surface.

12. In a printer operable in a duplex print mode by forming in a master a first and a second image, which are to be respectively transferred to one side and the other side of a sheet-like recording medium, side by side in a circumferential direction of a print drum, wrapping said master around said print drum, pressing said sheet-like recording medium against said print drum with a press roller to thereby print said first image on said one side, and then pressing said sheet-like recording medium against said print drum with said press roller to thereby print said second image on said other side, said press roller comprises an elastic body having a fluorine compound layer on a surface thereof.

13. The printer as claimed in claim 12, wherein said elastic body comprises rubber while said fluorine compound layer comprises a film tube closely fitted on the surface of said elastic body.

14. The printer as claimed in claim 12, wherein said

elastic body comprises rubber while said fluorine compound layer is formed by coating.

15. The printer as claimed in claim 12, further comprising cleaning means for removing ink deposited on a surface of said press roller.

16. The printer as claimed in claim 15, wherein said cleaning means is located between a position for transferring an image to the recording medium and a position for refeeding the recording medium, which carries the image on one side thereof, in a direction of rotation of said press roller.

17. The printer as claimed in claim 15, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

18. The printer as claimed in claim 17, wherein at least a surface of said roller is porous.

19. The printer as claimed in claim 15, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

20. The printer as claimed in claim 12, further comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

21. The printer as claimed in claim 20, wherein said roller comprises an elastic roller having an adhesive surface while said elastic roller comprises rubber and is caused to rotate by said press roller.

22. The printer as claimed in claim 20, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade configured to scrape off the ink deposited on said smooth surface.

23. A printer operable in a duplex print mode, comprising:

a first print drum configured to wrap a first master formed with a first image, which is to be printed on one surface of a sheet-like recording medium, therearound;

a first press roller facing said first drum for pressing the sheet-like recording medium against said first print drum;

a second print drum facing said first print drum at a position downstream of said first print drum in a

direction of sheet conveyance, said second print drum wrapping a second master formed with a second image, which is to be printed on the other side of the sheet-like recording medium, therearound; and

a second press roller facing said second print drum for pressing the sheet-like recording medium against said second print drum;

wherein at least said second press roller comprises an elastic body having a fluorine compound on a surface thereof.

24. The printer as claimed in claim 23, wherein said elastic body comprises rubber while said fluorine compound layer comprises a film tube closely fitted on the surface of said elastic body.

25. The printer as claimed in claim 23, wherein said elastic body comprises rubber while said fluorine compound layer is formed by coating.

26. The printer as claimed in claim 23, further comprising cleaning means for removing ink deposited on a surface of said press roller.

27 The printer as claimed in claim 26, wherein said cleaning means is located between a position for transferring an image to the recording medium and a position for refeeding the recording medium, which carries the image on one side thereof, in a direction of rotation

of said press roller.

28. The printer as claimed in claim 26, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

29. The printer as claimed in claim 28, wherein at least a surface of said roller is porous.

30. The printer as claimed in claim 26, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

31. The printer as claimed in claim 23, further comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

32. The printer as claimed in claim 31, wherein said roller comprises an elastic roller having an adhesive surface while said elastic roller comprises rubber and is caused to rotate by said press roller.

33. The printer as claimed in claim 31, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade configured to scrape off the ink deposited on said smooth surface.

34. A printer operable in a duplex print mode for printing an image on one side of a sheet-like recording medium and then printing an image on the other side of said sheet-like recording medium, said printer comprising:

at least one print drum; and

at least one press roller facing said print drum for pressing the sheet-like pressing member against said print drum;

wherein said press roller comprises, when configured to press the other side of the sheet-like recording medium against said print drum, an elastic body on which a film, formed with fine projections by surface treatment, is coated or adhered.

35. The printer as claimed in claim 34, wherein said elastic body comprises rubber while said film comprises at least one of fine glass grains and fine ceramic grains.

36. The printer as claimed in claim 35, wherein said fine glass grains and said fine ceramic grains both are spherical.

37. The printer as claimed in claim 35, wherein said

fine glass grains and said fine ceramic grains both are not spherical.

38. The printer as claimed in claim 34, further comprising cleaning means for removing ink deposited on a surface of said press roller.

39. The printer as claimed in claim 38, wherein said cleaning means is located between a position for transferring an image to the recording medium and a position for refeeding the recording medium, which carries the image on one side thereof, in a direction of rotation of said press roller.

40 The printer as claimed in claim 38, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

41. The printer as claimed in claim 40, wherein at least a surface of said roller is porous.

42. The printer as claimed in claim 38, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

43. The printer as claimed in claim 34, further comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

44. The printer as claimed in claim 43, wherein said roller comprises an elastic roller having an adhesive surface while said elastic roller comprises rubber and is caused to rotate by said press roller.

45. The printer as claimed in claim 34, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade configured to scrape off the ink deposited on said smooth surface.

46. In a printer operable in a duplex print mode by forming in a master a first and a second image, which are to be respectively transferred to one side and the other side of a sheet-like recording medium, side by side in a circumferential direction of a print drum, wrapping said master around said print drum, pressing said sheet-like recording medium against said print drum with a press roller to thereby print said first image on said one side, and then pressing said sheet-like recording medium against said print drum with said press roller to thereby print

said second image on said other side, said press roller comprises an elastic body on which a film, formed with fine projections by surface treatment, is coated or adhered.

47. The printer as claimed in claim 46, wherein said elastic body comprises rubber while said film comprises at least one of fine glass grains and fine ceramic grains.

48. The printer as claimed in claim 47, wherein said fine glass grains and said fine ceramic grains both are spherical.

49. The printer as claimed in claim 47, wherein said fine glass grains and said fine ceramic grains both are not spherical.

50. The printer as claimed in claim 46, further comprising cleaning means for removing ink deposited on a surface of said press roller.

51. The printer as claimed in claim 50, wherein said cleaning means is located between a position for transferring an image to the recording medium and a position for refeeding the recording medium, carrying the image on one side thereof, in a direction of rotation of said press roller.

52. The printer as claimed in claim 50, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said

press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

53. The printer as claimed in claim 52, wherein at least a surface of said roller is porous.

54. The printer as claimed in claim 50, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

55. The printer as claimed in claim 46, further comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

56. The printer as claimed in claim 55, wherein said roller comprises an elastic roller having an adhesive surface while said elastic roller comprises rubber and is caused to rotate by said press roller.

57. The printer as claimed in claim 55, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade configured to scrape off the ink deposited on said smooth surface.

58. A printer operable in a duplex print mode, comprising:

a first print drum configured to wrap a first master formed with a first image, which is to be printed on one surface of a sheet-like recording medium, therearound;

a first press roller facing said first drum for pressing the sheet-like recording medium against said first print drum;

a second print drum facing said first print drum at a position downstream of said first print drum in a direction of sheet conveyance, said second print drum wrapping a second master formed with a second image, which is to be printed on the other side of the sheet-like recording medium, therearound; and

a second press roller facing said second print drum for pressing the sheet-like recording medium against said second print drum;

wherein at least said second press roller comprises an elastic body on which a film, formed with fine projections by surface treatment, is coated or adhered.

59. The printer as claimed in claim 58, wherein said elastic body comprises rubber while said film comprises at least one of fine glass grains and fine ceramic grains.

60. The printer as claimed in claim 59, wherein said fine glass grains and said fine ceramic grains both are

spherical.

61. The printer as claimed in claim 59, wherein said fine glass grains and said fine ceramic grains both are not spherical.

62. The printer as claimed in claim 58, further comprising cleaning means for removing ink deposited on a surface of said press roller.

63. The printer as claimed in claim 62, wherein said cleaning means is located between a position for transferring an image to the recording medium and a position for refeeding the recording medium, which carries the image on one side thereof, in a direction of rotation of said press roller.

64. The printer as claimed in claim 62, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

65. The printer as claimed in claim 64, wherein at least a surface of said roller is porous.

66. The printer as claimed in claim 62, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

67. The printer as claimed in claim 58, further comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

68. The printer as claimed in claim 67, wherein said roller comprises an elastic roller having an adhesive surface while said elastic roller comprises rubber and is caused to rotate by said press roller.

69. The printer as claimed in claim 67, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade configured to scrape off the ink deposited on said smooth surface.

70. A printer operable in a duplex print mode for printing an image on one side of a sheet-like recording medium and then printing an image on the other side of said sheet-like recording medium, said printer comprising:

at least one print drum; and

at least one press roller facing said print drum for pressing the sheet-like recording medium against said print drum;

wherein said press roller comprises, when configured to press the other side of the sheet-like recording medium against said print drum, an elastic body having a surface formed with fine projections.

71. The printer as claimed in claim 70, wherein said elastic body comprises rubber while said projections are formed by at least one of fine glass grains and fine ceramic grains.

72. The printer as claimed in claim 71, wherein said fine glass grains and said fine ceramic grains both are spherical.

73. The printer as claimed in claim 71, wherein said fine glass grains and said fine ceramic grains both are not spherical.

74. The printer as claimed in claim 70, further comprising cleaning means for removing ink deposited on a surface of said press roller.

75. The printer as claimed in claim 74, wherein said cleaning means is located between a position for transferring an image to the recording medium and a position for refeeding the recording medium, which carries the image on one side thereof, in a direction of rotation of said press roller.

76. The printer as claimed in claim 74, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

77. The printer as claimed in claim 74, wherein at least a surface of said roller is porous.

78. The printer as claimed in claim 74, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

79. The printer as claimed in claim 70, further comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

80. The printer as claimed in claim 79, wherein said roller comprises an elastic roller having an adhesive surface while said elastic roller comprises rubber and is caused to rotate by said press roller.

81. The printer as claimed in claim 79, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade

configured to scrape off the ink deposited on said smooth surface.

82. In a printer operable in a duplex print mode by forming in a master a first and a second image, which are to be respectively transferred to one side and the other side of a sheet-like recording medium, side by side in a circumferential direction of a print drum, wrapping said master around said print drum, pressing said sheet-like recording medium against said print drum with a press roller to thereby print said first image on said one side, and then pressing said sheet-like recording medium against said print drum with said press roller to thereby print said second image on said other side, said press roller comprises an elastic body having a surface formed with fine projections.

83. The printer as claimed in claim 82, wherein said elastic body comprises rubber while said projections are formed by at least one of fine glass grains and fine ceramic grains.

84. The printer as claimed in claim 83, wherein said fine glass grains and said fine ceramic grains both are spherical.

85. The printer as claimed in claim 83, wherein said fine glass grains and said fine ceramic grains both are not spherical.

86. The printer as claimed in claim 82, further comprising cleaning means for removing ink deposited on a surface of said press roller.

87. The printer as claimed in claim 86, wherein said cleaning means is located between a position for transferring an image to the recording medium and a position for refeeding the recording medium, which carries the image on one side thereof, in a direction of rotation of said press roller.

88. The printer as claimed in claim 86, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

89. The printer as claimed in claim 88, wherein at least a surface of said roller is porous.

90. The printer as claimed in claim 86, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

91. The printer as claimed in claim 82, further

comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

92. The printer as claimed in claim 91, wherein said roller comprises an elastic roller having an adhesive surface while said elastic roller comprises rubber and is caused to rotate by said press roller.

93. The printer as claimed in claim 91, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade configured to scrape off the ink deposited on said smooth surface.

94. A printer operable in a duplex print mode, comprising:

a first print drum configured to wrap a first master formed with a first image, which is to be printed on one surface of a sheet-like recording medium, therearound;

a first press roller facing said first drum for pressing the sheet-like recording medium against said first print drum;

a second print drum facing said first print drum at a position downstream of said first print drum in a direction of sheet conveyance, said second print drum wrapping a second master formed with a second image, which

is to be printed on the other side of the sheet-like recording medium, therearound; and

a second press roller facing said second print drum for pressing the sheet-like recording medium against said second print drum;

wherein at least said second press roller comprises an elastic body having a surface formed with fine projections.

95. The printer as claimed in claim 94, wherein said elastic body comprises rubber while said projections are formed by at least one of fine glass grains and fine ceramic grains.

96. The printer as claimed in claim 95, wherein said fine glass grains and said fine ceramic grains both are spherical.

97. The printer as claimed in claim 95, wherein said fine glass grains and said fine ceramic grains both are not spherical.

98. The printer as claimed in claim 94, further comprising cleaning means for removing ink deposited on a surface of said press roller.

99. The printer as claimed in claim 98, wherein said cleaning means is located between a position for transferring an image to the recording medium and a position for refeeding the recording medium, which carries

the image on one side thereof, in a direction of rotation of said press roller.

100. The printer as claimed in claim 98, wherein said cleaning means comprises:

a roller pressed against said press roller by preselected pressure for wiping off ink deposited on said press roller; and

drive means for causing said roller to rotate at a peripheral speed different from a peripheral speed of said press roller.

101. The printer as claimed in claim 100, wherein at least a surface of said roller is porous.

102. The printer as claimed in claim 98, wherein said cleaning means comprises:

coating means for coating a small amount of liquid on the surface of said press roller; and

a blade contacting the surface of said press roller.

103. The printer as claimed in claim 94, further comprising a roller pressed against said press roller by preselected pressure for removing ink deposited on the surface of said press roller by causing said ink to be transferred to said roller.

104. The printer as claimed in claim 103, wherein said roller comprises an elastic roller having an adhesive surface while said elastic roller comprises rubber and is

caused to rotate by said press roller.

105. The printer as claimed in claim 103, wherein said roller is formed of either one of rubber and metal and has a smooth surface, said printer further comprising a blade configured to scrape off the ink deposited on said smooth surface.

106. A printer operable in a duplex print mode for printing an image on one side of a sheet-like recording medium and then printing, within 3 seconds, an image on the other side of said sheet-like recording medium, said printer comprising:

at least one print drum; and

at least one press roller facing said print drum for pressing the sheet-like recording medium against said print drum;

wherein said press roller comprises, when configured to press the other side of the sheet-like recording medium against said print drum, a surface formed with a number of projections, each having a peak provided with a radius of 0.04 mm or below, at a mean pitch of 0.4 mm or below.

107. The printer as claimed in claim 106, wherein said projections are formed of synthetic resin and provided with a conical or polygonal pyramidal shape whose peak angle is 100° or below each.

108. The printer as claimed in claim 107, wherein said projections are formed on an elongate sheet member having a preselected width and spirally wrapped around the surface of said press roller.

109. The printer as claimed in claim 106, further comprising cleaning means for removing ink deposited on the surface of said press roller.

110. The printer as claimed in claim 109, wherein said cleaning means comprises a porous cleaning roller caused to rotate at a lower peripheral speed than said press roller during printing.

111. The printer as claimed in claim 110, wherein said cleaning roller is pressed against said pressure roller by a biasing force of 3N or below.

112. In a printer operable in a duplex print mode by forming in a master a first and a second image, which are to be respectively transferred to one side and the other side of a sheet-like recording medium, side by side in a circumferential direction of a print drum, wrapping said master around said print drum, pressing said sheet-like recording medium against said print drum with a press roller to thereby print said first image on said one side, and then pressing, within 3 seconds, said sheet-like recording medium against said print drum with said press roller to thereby print said second image on said other

side, said press roller comprises a surface formed with a number of projections, each having a peak provided with a radius of 0.04 mm or below, at a mean pitch of 0.4 mm or below.

113. The printer as claimed in claim 112, wherein said projections are formed of synthetic resin and provided with a conical or polygonal pyramidal shape whose peak angle is  $100^{\circ}$  or below each.

114. The printer as claimed in claim 113, wherein said projections are formed on an elongate sheet member having a preselected width and spirally wrapped around the surface of said press roller.

115. The printer as claimed in claim 112, further comprising cleaning means for removing ink deposited on the surface of said press roller.

116. The printer as claimed in claim 115, wherein said cleaning means comprises a porous cleaning roller caused to rotate at a lower peripheral speed than said press roller during printing.

117. The printer as claimed in claim 116, wherein said cleaning roller is pressed against said pressure roller by a biasing force of 3N or below.

118. A printer operable in a duplex print mode, comprising:

a first print drum configured to wrap a first master

formed with a first image, which is to be printed on one surface of a sheet-like recording medium, therearound;

a first press roller facing said first drum for pressing the sheet-like recording medium against said first print drum;

a second print drum facing said first print drum at a position downstream of said first print drum in a direction of sheet conveyance, said second print drum wrapping a second master formed with a second image, which is to be printed on the other side of the sheet-like recording medium, therearound; and

a second press roller facing said second print drum for pressing the sheet-like recording medium against said second print drum;

wherein after said first press roller has pressed the sheet-like recording medium against said print drum to thereby print the first image on one side of said sheet-like recording medium, said second press roller presses, within 3 seconds, said sheet-like recording medium against said print drum to thereby print the second image on the other side of said sheet-like recording medium, and

at least said second press roller comprises a surface formed with a number of projections, each having a peak provided with a radius of 0.04 mm or below, at a mean pitch

of 0.4 mm or below.

119. The printer as claimed in claim 118, wherein said projections are formed of synthetic resin and provided with a conical or polygonal pyramidal shape whose peak angle is  $100^\circ$  or below each.

120. The printer as claimed in claim 119, wherein said projections are formed on an elongate sheet member having a preselected width and spirally wrapped around the surface of said press roller.

121. The printer as claimed in claim 118, further comprising cleaning means for removing ink deposited on the surface of said press roller.

122. The printer as claimed in claim 121, wherein said cleaning means comprises a porous cleaning roller caused to rotate at a lower peripheral speed than said press roller during printing.

123. The printer as claimed in claim 122, wherein said cleaning roller is pressed against said pressure roller by a biasing force of 3N or below.

124. A printer operable in a duplex print mode for printing an image on one side of a sheet-like recording medium and then printing, within 3 seconds, an image on the other side of said sheet-like recording medium, said printer comprising:

at least one print drum; and

at least one press roller facing said print drum for pressing the sheet-like recording medium against said print drum;

wherein said press roller comprises, when configured to press the other side of the sheet-like recording medium against said print drum, a surface including a stepped portion formed by a number of spherical bodies, each having a radius of 0.1 mm or below, arranged with a maximum difference in height of 0.03 mm or above and a mean pitch of 0.15 mm or above between nearby highest peaks.

125. The printer as claimed in claim 124, wherein said projections are formed of synthetic resin and provided with a conical or polygonal pyramidal shape whose peak angle is  $100^{\circ}$  or below each.

126. The printer as claimed in claim 125, wherein said projections are formed on an elongate sheet member having a preselected width and spirally wrapped around the surface of said press roller.

127. The printer as claimed in claim 124, further comprising cleaning means for removing ink deposited on the surface of said press roller.

128. The printer as claimed in claim 127, wherein said cleaning means comprises a porous cleaning roller caused to rotate at a lower peripheral speed than said press

roller during printing.

129. The printer as claimed in claim 128, wherein said cleaning roller is pressed against said pressure roller by a biasing force of 3N or below.

130. In a printer operable in a duplex print mode by forming in a master a first and a second image, which are to be respectively transferred to one side and the other side of a sheet-like recording medium, side by side in a circumferential direction of a print drum, wrapping said master around said print drum, pressing said sheet-like recording medium against said print drum with a press roller to thereby print said first image on said one side, and then pressing, within 3 seconds, said sheet-like pressing member against said print drum with said press roller to thereby print said second image on said other side, said press roller comprises a surface including a stepped portion formed by a number of spherical bodies, each having a radius of 0.1 mm or below, arranged with a maximum difference in height of 0.03 mm or above and a mean pitch of 0.15 mm or above between nearby highest peaks.

131. The printer as claimed in claim 130, wherein said projections are formed of synthetic resin and provided with a conical or polygonal pyramidal shape whose peak angle is 100° or below each.

132. The printer as claimed in claim 131, wherein

said projections are formed on an elongate sheet member having a preselected width and spirally wrapped around the surface of said press roller.

133. The printer as claimed in claim 130, further comprising cleaning means for removing ink deposited on the surface of said press roller.

134. The printer as claimed in claim 133, wherein said cleaning means comprises a porous cleaning roller caused to rotate at a lower peripheral speed than said press roller during printing.

135. The printer as claimed in claim 134, wherein said cleaning roller is pressed against said pressure roller by a biasing force of 3N or below.

136. A printer operable in a duplex print mode, comprising:

- a first print drum configured to wrap a first master formed with a first image, which is to be printed on one surface of a sheet-like recording medium, therearound;

- a first press roller facing said first drum for pressing the sheet against said first print drum;

- a second print drum facing said first print drum at a position downstream of said first print drum in a direction of sheet conveyance, said second print drum wrapping a second master formed with a second image, which is to be printed on the other side of the sheet-like

recording medium, therearound; and

a second press roller facing said second print drum for pressing the sheet-like recording medium against said second print drum;

wherein after said first press roller has pressed the sheet-like recording medium against said print drum to thereby print the first image on one side of said sheet-like recording medium, said second press roller presses, within 3 seconds, said sheet-like recording medium against said print drum to thereby print the second image on the other side of said sheet-like recording medium, and

at least said second press roller comprises a surface including a stepped portion formed by a number of spherical bodies, each having a radius of 0.1 mm or below, arranged with a maximum difference in height of 0.03 mm or above and a mean pitch of 0.15 mm or above between nearby highest peaks.

137. The printer as claimed in claim 136, wherein said projections are formed of synthetic resin and provided with a conical or polygonal pyramidal shape whose peak angle is 100° or below each.

138. The printer as claimed in claim 137, wherein said projections are formed on an elongate sheet member having a preselected width and spirally wrapped around the

surface of said press roller.

139. The printer as claimed in claim 136, further comprising cleaning means for removing ink deposited on the surface of said press roller.

140. The printer as claimed in claim 139, wherein said cleaning means comprises a porous cleaning roller caused to rotate at a lower peripheral speed than said press roller during printing.

141. The printer as claimed in claim 140, wherein said cleaning roller is pressed against said pressure roller by a biasing force of 3N or below.

142. In a sheet conveying member configured to contact, within 3 seconds since printing, an image surface of a sheet-like recording medium carrying an image thereon, a number of projections, each having a peak provided with a radius of 0.04 mm or below, are formed on a surface of said sheet conveying member at a mean pitch of 0.4 mm or below.

143. The member as claimed in claim 142, wherein said projections are formed of synthetic resin and provided with a conical or polygonal pyramidal shape having a peak angle of 100° or below.

144. The member as claimed in claim 143, wherein said projections are formed on an elongate sheet having a preselected width and spirally wrapped around the surface.

145. In a printer, fine projections are formed on a surface of a member rotatable or movable, when a sheet-like recording medium is conveyed, in contact with an image surface of said sheet-like recording medium.

146. The printer as claimed in claim 145, wherein said fine projections comprise substantially spherical bodies affixed to the surface.

147. The printer as claimed in claim 146, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

148. The printer as claimed in claim 146, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

149. The printer as claimed in claim 145, wherein said fine projections comprise substantially spherical bodies affixed to a surface of a film- or tape-like member covering the surface.

150. The printer as claimed in claim 149, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

151. The printer as claimed in claim 149, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

152. The printer as claimed in claim 145, wherein said fine projections comprise abrasive grains affixed the

surface.

153. The printer as claimed in claim 152, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

154. The printer as claimed in claim 145, wherein said fine projections comprise abrasive grains affixed to a film- or tape-like member covering the surface.

155. The printer as claimed in claim 154, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

156. The printer as claimed in claim 145, wherein said fine projections comprise conical or polygonal pyramidal projections.

157. The printer as claimed in claim 156, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

158. The printer as claimed in claim 157, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

159. The printer as claimed in claim 145, wherein said fine projections comprise conical or polygonal pyramidal projections affixed to a film- or tape-like film coating the surface.

160. The printer as claimed in claim 159, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but

300  $\mu\text{m}$  or below.

161. The printer as claimed in claim 160, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

162. The printer as claimed in claim 145, wherein said fine projections are formed by shot-peening the surface.

163. The printer as claimed in claim 145, wherein said fine projections are formed by a film- or tape-like member whose surface is subjected to shot-peening.

164. The printer as claimed in claim 145, wherein said fine projections are formed by etching the surface.

165. The printer as claimed in claim 145, wherein said fine projections are formed by coating a film- or tape-like member whose surface is subjected to etching.

166. In a printer, fine projections are formed on a surface of a member that contacts an image surface of a sheet-like recording medium being conveyed.

167. The printer as claimed in claim 166, wherein said fine projections comprise substantially spherical bodies affixed to the surface.

168. The printer as claimed in claim 167, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

169. The printer as claimed in claim 167, wherein

said substantially spherical bodies are formed of either one of glass and ceramics.

170. The printer as claimed in claim 166, wherein said fine projections comprise substantially spherical bodies affixed to a surface of a film- or tape-like member covering the surface.

171. The printer as claimed in claim 170, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

172. The printer as claimed in claim 170, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

173. The printer as claimed in claim 166, wherein said fine projections comprise abrasive grains affixed the surface.

174. The printer as claimed in claim 173, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

175. The printer as claimed in claim 166, wherein said fine projections comprise abrasive grains affixed to a film- or tape-like member covering the surface.

176. The printer as claimed in claim 175, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

177. The printer as claimed in claim 166, wherein

said fine projections comprise conical or polygonal pyramidal projections.

178. The printer as claimed in claim 177, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

179. The printer as claimed in claim 178, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

180. The printer as claimed in claim 166, wherein said fine projections comprise conical or polygonal pyramidal projections affixed to a film- or tape-like film coating the surface.

181. The printer as claimed in claim 180, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

182. The printer as claimed in claim 181, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

183. The printer as claimed in claim 166, wherein said fine projections are formed by shot-peening the surface.

184. The printer as claimed in claim 166, wherein said fine projections are formed by a film- or tape-like member whose surface is subjected to shot-peening.

185. The printer as claimed in claim 166, wherein

said fine projections are formed by etching the surface.

186. The printer as claimed in claim 166, wherein said fine projections are formed by coating a film- or tape-like member whose surface is subjected to etching.

187. In a printer for feeding or conveying a sheet-like recording medium, which carries a first image on one side thereof, to thereby print a second image on said one side of said sheet-like recording medium over said first image, fine projections are formed on a surface of a member rotatable or movable in contact with said one side of said sheet-like recording medium carrying said first image.

188. The printer as claimed in claim 187, wherein said fine projections comprise substantially spherical bodies affixed to the surface.

189. The printer as claimed in claim 188, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

190. The printer as claimed in claim 188, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

191. The printer as claimed in claim 187, wherein said fine projections comprise substantially spherical bodies affixed to a surface of a film- or tape-like member covering the surface.

192. The printer as claimed in claim 191, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

193. The printer as claimed in claim 191, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

194. The printer as claimed in claim 187, wherein said fine projections comprise abrasive grains affixed the surface.

195. The printer as claimed in claim 194, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

196. The printer as claimed in claim 187, wherein said fine projections comprise abrasive grains affixed to a film- or tape-like member covering the surface.

197. The printer as claimed in claim 196, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

198. The printer as claimed in claim 187, wherein said fine projections comprise conical or polygonal pyramidal projections.

199. The printer as claimed in claim 198, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

200. The printer as claimed in claim 199, wherein

a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

201. The printer as claimed in claim 187, wherein said fine projections comprise conical or polygonal pyramidal projections affixed to a film- or tape-like film coating the surface.

202. The printer as claimed in claim 201, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

203. The printer as claimed in claim 202, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

204. The printer as claimed in claim 187, wherein said fine projections are formed by shot-peening the surface.

205. The printer as claimed in claim 187, wherein said fine projections are formed by a film- or tape-like member whose surface is subjected to shot-peening.

206. The printer as claimed in claim 187, wherein said fine projections are formed by etching the surface.

207. The printer as claimed in claim 187, wherein said fine projections are formed by coating a film- or tape-like member whose surface is subjected to etching.

208. In a printer for feeding or conveying a sheet-like recording medium, which carries a first image

on one side thereof, to thereby print a second image on said one side of said sheet-sheet like recording medium above said first image, fine projections are formed on a surface of a stationary member that contacts said one side of said sheet-like recording medium carrying said first image.

209. The printer as claimed in claim 208, wherein said fine projections comprise substantially spherical bodies affixed to the surface.

210. The printer as claimed in claim 209, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

211. The printer as claimed in claim 209, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

212. The printer as claimed in claim 208, wherein said fine projections comprise substantially spherical bodies affixed to a surface of a film- or tape-like member covering the surface.

213. The printer as claimed in claim 212, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

214. The printer as claimed in claim 212, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

215. The printer as claimed in claim 208, wherein said fine projections comprise abrasive grains affixed the surface.

216. The printer as claimed in claim 215, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

217. The printer as claimed in claim 208, wherein said fine projections comprise abrasive grains affixed to a film- or tape-like member covering the surface.

218. The printer as claimed in claim 217, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

219. The printer as claimed in claim 208, wherein said fine projections comprise conical or polygonal pyramidal projections.

220. The printer as claimed in claim 219, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

221. The printer as claimed in claim 220, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

222. The printer as claimed in claim 208, wherein said fine projections comprise conical or polygonal pyramidal projections affixed to a film- or tape-like film coating the surface.

223. The printer as claimed in claim 222, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

224. The printer as claimed in claim 223, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

225. The printer as claimed in claim 208, wherein said fine projections are formed by shot-peening the surface.

226. The printer as claimed in claim 208, wherein said fine projections are formed by a film- or tape-like member whose surface is subjected to shot-peening.

227. The printer as claimed in claim 208, wherein said fine projections are formed by etching the surface.

228. The printer as claimed in claim 208, wherein said fine projections are formed by coating a film- or tape-like member whose surface is subjected to etching.

229. In a printer for feeding or conveying a sheet-like recording medium, which carries a first image on one side thereof, to thereby print a second image on the other side of said sheet-like recording medium, fine projections are formed on a surface of a member rotatable or movable in contact with said one side of said sheet-like recording medium carrying said first image.

230. The printer as claimed in claim 229, wherein

said fine projections comprise substantially spherical bodies affixed to the surface.

231. The printer as claimed in claim 230, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

232. The printer as claimed in claim 230, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

233. The printer as claimed in claim 229, wherein said fine projections comprise substantially spherical bodies affixed to a surface of a film- or tape-like member covering the surface.

234. The printer as claimed in claim 233, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

235. The printer as claimed in claim 233, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

236. The printer as claimed in claim 229, wherein said fine projections comprise abrasive grains affixed the surface.

237. The printer as claimed in claim 236, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

238. The printer as claimed in claim 229, wherein

said fine projections comprise abrasive grains affixed to a film- or tape-like member covering the surface.

239. The printer as claimed in claim 238, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

240. The printer as claimed in claim 229, wherein said fine projections comprise conical or polygonal pyramidal projections.

241. The printer as claimed in claim 240, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

242. The printer as claimed in claim 241, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

243. The printer as claimed in claim 229, wherein said fine projections comprise conical or polygonal pyramidal projections affixed to a film- or tape-like film coating the surface.

244. The printer as claimed in claim 243, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

245. The printer as claimed in claim 244, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

246. The printer as claimed in claim 229, wherein

said fine projections are formed by shot-peening the surface.

247. The printer as claimed in claim 229, wherein said fine projections are formed by a film- or tape-like member whose surface is subjected to shot-peening.

248. The printer as claimed in claim 229, wherein said fine projections are formed by etching the surface.

249. The printer as claimed in claim 229, wherein said fine projections are formed by coating a film- or tape-like member whose surface is subjected to etching.

250. In a printer for feeding or conveying a sheet-like recording medium, which carries a first image on one side thereof, to thereby print a second image on the other side of said sheet-like recording medium, fine projections are formed on a surface of a stationary member that contacts said one side of said sheet-like recording medium carrying said first image.

251. The printer as claimed in claim 250, wherein said fine projections comprise substantially spherical bodies affixed to the surface.

252. The printer as claimed in claim 251, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

253. The printer as claimed in claim 251, wherein said substantially spherical bodies are formed of either

one of glass and ceramics.

254. The printer as claimed in claim 250, wherein said fine projections comprise substantially spherical bodies affixed to a surface of a film- or tape-like member covering the surface.

255. The printer as claimed in claim 254, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

256. The printer as claimed in claim 254, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

257. The printer as claimed in claim 250, wherein said fine projections comprise abrasive grains affixed the surface.

258. The printer as claimed in claim 257, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

259. The printer as claimed in claim 250, wherein said fine projections comprise abrasive grains affixed to a film- or tape-like member covering the surface.

260. The printer as claimed in claim 259, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

261. The printer as claimed in claim 250, wherein said fine projections comprise conical or polygonal

pyramidal projections.

262. The printer as claimed in claim 261, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

263. The printer as claimed in claim 262, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

264. The printer as claimed in claim 250, wherein said fine projections comprise conical or polygonal pyramidal projections affixed to a film- or tape-like film coating the surface.

265. The printer as claimed in claim 264, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

266. The printer as claimed in claim 265, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

267. The printer as claimed in claim 250, wherein said fine projections are formed by shot-peening the surface.

268. The printer as claimed in claim 250, wherein said fine projections are formed by a film- or tape-like member whose surface is subjected to shot-peening.

269. The printer as claimed in claim 250, wherein said fine projections are formed by etching the surface.

270. The printer as claimed in claim 250, wherein said fine projections are formed by coating a film- or tape-like member whose surface is subjected to etching.

271. In a printer for effecting, at a downstream side in a direction of conveyance, second printing on the other side of a sheet-like recording medium carrying a first image on one side thereof, fine projections are formed on a surface of a member rotatable or movable in contact with said one side of said sheet-like recording medium.

272. The printer as claimed in claim 271, said fine projections are formed on a surface of a member rotatable in contact with the other side of the recording medium or a stationary member that contacts said other side.

273. The printer as claimed in claim 271, wherein said fine projections comprise substantially spherical bodies affixed to the surface.

274. The printer as claimed in claim 273, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

275. The printer as claimed in claim 273, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

276. The printer as claimed in claim 271, wherein said fine projections comprise substantially spherical bodies affixed to a surface of a film- or tape-like member

covering the surface.

277. The printer as claimed in claim 276, wherein said substantially spherical bodies have a radius of 20  $\mu\text{m}$  or above, but 200  $\mu\text{m}$  or below.

278. The printer as claimed in claim 276, wherein said substantially spherical bodies are formed of either one of glass and ceramics.

279. The printer as claimed in claim 271, wherein said fine projections comprise abrasive grains affixed the surface.

280. The printer as claimed in claim 279, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

281. The printer as claimed in claim 271, wherein said fine projections comprise abrasive grains affixed to a film- or tape-like member covering the surface.

282. The printer as claimed in claim 281, wherein the abrasive grains have a mean size of #250 or above, but #2,000 or below.

283. The printer as claimed in claim 271, wherein said fine projections comprise conical or polygonal pyramidal projections.

284. The printer as claimed in claim 283, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

285. The printer as claimed in claim 284, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

286. The printer as claimed in claim 271, wherein said fine projections comprise conical or polygonal pyramidal projections affixed to a film- or tape-like film coating the surface.

287. The printer as claimed in claim 286, wherein said projections have a mean pitch of 20  $\mu\text{m}$  or above, but 300  $\mu\text{m}$  or below.

288. The printer as claimed in claim 287, wherein a peak portion of each of said projections has a radius of curvature of 50  $\mu\text{m}$  or below.

289. The printer as claimed in claim 271, wherein said fine projections are formed by shot-peening the surface.

290. The printer as claimed in claim 271, wherein said fine projections are formed by a film- or tape-like member whose surface is subjected to shot-peening.

291. The printer as claimed in claim 271, wherein said fine projections are formed by etching the surface.

292. The printer as claimed in claim 271, wherein said fine projections are formed by coating a film- or tape-like member whose surface is subjected to etching.